Iowa's Underground Coal Mines: Historic Records Compiled

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Coal has been mined by underground methods in 34 of Iowa's southern and central counties. This industry, nearly 150 years old, began in the 1840's with small drift mines dug into hillside outcroppings of coal and has evolved into a highly mechanized activity during the latter half of this century. Evidence of this past underground mining is usually subtle or nonexistent, in contrast to the disturbed terrain resulting from surface mining activity in the days before land reclamation was required. Thus, historic records kept at the time of mining are usually the only existing source of information for mine locations, the extent of underground excavations, and other characteristics.

A thorough study of Iowa's available mining records has determined that approximately 5,500 underground mines have operated in the state. The records for each site vary greatly in accuracy and completeness. Mine locations and extents, information which is critical for evaluating the impact of underground mining on current or future land use, are vague or ambiguous in many of the records. Coal mines have been added to the Iowa Department of Natural Resources' Geographic Information System (GIS) by the Iowa Geological Survey. The Survey's interpretation and compilation of these records for the GIS took into account their variabilities by organizing the results according to the accuracy with which the undermined area could be delineated on a map. In general, any mine that could be located within one square mile, regardless of whether its extent was known, was considered a mappable site and added to the GIS.

Slightly less than half (2,715) of the mine sites were determined to be mappable using the one-square-mile criteria. The extent of underground mining is known for 1,226 of these mappable sites. Of this latter group, over half (769) were documented by surveyed mine maps which included good locational references. These are considered the most accurately mapped mine sites. A few mines (80) were documented by surveyed maps, but had poor or ambiguous references to location. The remainder of the coal mines (377) had locations and extents documented by sources other than surveyed maps. The most common alternate sources were township maps prepared by the Office of State Mine Inspectors, followed by maps in the Iowa Geological Survey annual reports, and mining company lease maps. Comparisons of surveyed mine maps with the State Mine Inspectors' maps for the same sites showed the undermined areas on the latter to be generalized and usually enlarged compared to the areas shown on the surveyed maps.

The sites documented by location only (1,489) comprise over half the mappable mines. These sites are treated as point locations since the extent of underground mining is unknown. Information on a few of these mines suggests they were large producers of coal, probably undermining large areas; however, most of these mines were likely small local opera-tions. The mines were classified by the precision with which they could be mapped, and two classes were established: 1) mines that could be located to within one quarter-section (835), and 2) mines that could be located to within one section (654).

Locations for approximately 2,800 other mines were too vague or too generalized to be useful. The exact number of these mines is difficult to determine because the records usually consist only of a mine name, a post office address, and a supervisor's name. It was difficult to determine if slight variations in mine names or supervisors' names indicated different sites or merely differences in the way the information was recorded for a single site. In addition to enabling sites to be mapped, precise location data would have helped resolve many conflicts in the identities of mine sites.

The area of underground mines having known geographic extents totalled 71,900 acres or 112 square miles. The bulk of this undermined territory is concentrated in four southern and two central Iowa counties (see map above). These six counties contain 82.4 percent of the documented undermined area in Iowa and 74.6 percent of the mines with documented extents. Distribution of affected areas within these counties is uneven as well. For example, Liberty Township in southeastern Marion County is extensively undermined. This area is further complicated by the occurrence of two to three mineable coal seams in vertical succession. Multiple levels of mining occur in several locations and are particularly common where a surface mine overlies an underground mine. Although the largest total acreage of undermined land is in Monroe County, where over six percent of the county is affected (15,631 acres), most of the mined area in Polk County (14,914 acres) underlies the city of Des Moines and surrounding communities.

Although the evidence of past underground mining is often difficult to detect, abandoned mines continue to impact the environment and the future in various ways. Undermining makes the land surface unstable. Subsidence (sinking or collapse) of the land surface has occurred over abandoned underground mines in Iowa, and this process can be expected to continue. The phenomenon has been particularly troublesome in urban areas where repairs to subsidence-damaged buildings can be difficult and expensive. In addition, acid drainage seeping from underground mines has adversely affected agricultural land downslope from mined sites, both by its toxic effects and by keeping the land too wet to cultivate. Underground mines which adjoin or underlie surface mines also have complicated strip-mine reclamation projects by making slopes and highwalls unstable and causing persistent drainage problems. Finally, any future development of coal resources in Iowa will be directly impacted by past mining which may have removed part of the targeted resource and may complicate the operation of new mines.

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